

# **Audit**



# **Report**

OFFICE OF THE INSPECTOR GENERAL

**HOTLINE ALLEGATIONS CONCERNING A REQUEST  
FOR PROPOSAL FOR THE DEFENSE MESSAGE  
SYSTEM**

Report No. 95-084

January 26, 1995

This special version of the report has been revised  
to omit Acquisition-Related data.

**Department of Defense**

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### **Acronyms**

AIS	Automated Information System
AUTODIN	Automatic Digital Network
DISA	Defense Information Systems Agency
DMS	Defense Message System
MAISRC	Major Automated Information Systems Review Council
RFP	Request for Proposal



**INSPECTOR GENERAL**  
**DEPARTMENT OF DEFENSE**  
**400 ARMY NAVY DRIVE**  
**ARLINGTON, VIRGINIA 22202-2884**



January 26, 1995

**MEMORANDUM FOR UNDER SECRETARY OF DEFENSE (COMPTROLLER)**  
**ASSISTANT SECRETARY OF DEFENSE (COMMAND,**  
**CONTROL, COMMUNICATIONS, AND**  
**INTELLIGENCE)**  
**DIRECTOR, DEFENSE INFORMATION SYSTEMS**  
**AGENCY**  
**DIRECTOR, NATIONAL SECURITY AGENCY**

**SUBJECT: Audit Report on Hotline Allegations Concerning a Request for Proposal**  
**for the Defense Message System (Report No. 95-084)**

We are providing this final report for your information and use. The audit was made in response to a complaint to the Defense Hotline regarding the request for proposal for the Defense Message System. Management comments on a draft of this report were considered in preparing the final report. The comments conformed to the requirements of DoD Directive 7650.3, and no further comments are required.

The courtesies extended to the audit staff are appreciated. If you have questions on this audit, please contact Ms. Mary Lu Ugone, Audit Program Director, at (703) 604-9529 (DSN 664-9529) or Mr. Mickey Lynn, Audit Project Manager, at (703) 604-9547. The distribution of this report is listed in Appendix G. The audit team members are listed inside the back cover.

*David K. Steensma*

David K. Steensma  
Deputy Assistant Inspector General  
for Auditing

## **Office of the Inspector General, DoD**

**Report No. 95-084**  
(Project No. 4RE-8016)

**January 26, 1995**

### **HOTLINE ALLEGATIONS CONCERNING A REQUEST FOR PROPOSAL FOR THE DEFENSE MESSAGE SYSTEM**

#### **EXECUTIVE SUMMARY**

**Introduction.** The purpose of the Defense Message System (DMS) is to provide writer-to-reader organizational and individual message service to all DoD users, including deployed tactical users, and connection to other Government, allied, and Defense contractor users as needed. DMS, a system estimated to have an acquisition cost of about \* and a life-cycle cost of about \* , will service about \* customers by the year 2000. In March 1994, the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) designated the DMS a major automated information system and authorized release of the DMS request for proposal to contractors. The Defense Hotline received allegations in May 1994 that the DMS request for proposal contained major flaws.

**Objective.** The objective of the audit was to determine the validity of allegations made to the Defense Hotline related to the request for proposal for the DMS. Specifically, the allegations relate to three categories: the cost of DMS was understated, the required multilevel security environment was not defined, and future requirements were not identified in the request for proposal.

**Audit Results.** We did not substantiate allegations concerning the multilevel security environment or future requirements for DMS. The allegation that the cost of the DMS was understated had merit.

DoD acquisition policy was not followed for development of the DMS. As a result, award of the DMS contract for system development and installation was planned before the Major Automated Information System Review Council reviewed the cost and benefits of the DMS and provided the milestone decision to proceed into development. Details are in Part II, and Appendix C, Part III, provides the specific allegations and the audit results pertaining to each allegation.

**Internal Controls.** We did not review the internal management control program for the DMS because we limited the scope of the audit to the specific allegations. Nonetheless, the audit identified a material noncompliance in that DoD acquisition policy internal controls was not followed for development of the DMS. The material noncompliance is discussed in Part II.

\* Acquisition-Related data removed.

**Potential Benefits of Audit.** About \$684,000 (see Appendix E) could be put to better use if DoD recovers the cost of a Government-furnished microchip. Other potential monetary benefits are undeterminable until the recommendation on program costs is implemented. Further, implementation of the recommendations will ensure that DoD's investment in DMS is cost-effective.

**Summary of Recommendations.** We recommend delay of approval to award the DMS contract until the Major Automated Information System Review Council has reviewed and validated program cost data for completeness and accuracy. Further, we recommend a Milestone II review for the DMS program and that funding be withheld for the DMS until program costs and cost-benefit analyses are reviewed and validated.

We further recommend correction of DMS cost data to reflect the cost of the Government-furnished microchip and the costs to upgrade the baseline system as an alternative to the baseline system. Additionally, we recommend establishing controls to recover the cost of the microchip when DMS equipment is sold to non-DoD agencies.

**Management Comments.** The Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) planned to award the contract, \*. Additionally, on December 8, 1994, the Major Automated Information System Review Council reviewed the proposed contract award for the DMS; the resultant System Decision Memorandum established requirements before the Milestone III review. Further, management agreed to include the cost of the Government-furnished microchip in the DMS cost, but did not agree to show the costs to upgrade the baseline system as an alternative to the baseline system. Additionally, management agreed to establish controls to ensure cost recovery of the microchip. Management comments are discussed in Part II, and the complete texts of the comments are in Part IV.

**Audit Response.** After the draft report was issued on November 10, 1994, we met with representatives of the Under Secretary of Defense (Comptroller), the Director, Program Analysis and Evaluation, the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence), and the Defense Information Systems Agency. As a result of several meetings, we no longer objected to award of the contract \* and cost risk to the Government was minimized during the period that cost estimates are completed and validated and that the DMS program is reviewed by the MAISRC. Management's actions meet the intent of the recommendations. Regarding management's disagreement with showing costs to upgrade the baseline system as an alternative to the baseline system, we are deferring to the Office of the Director, Program Analysis and Evaluation, to determine appropriate treatment of those costs during the review and validation of DMS program costs.

\* Acquisition-Related data removed.

# Table of Contents

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<b>Executive Summary</b>	<b>i</b>
<b>Part I - Introduction</b>	<b>1</b>
Background	2
Objective	3
Scope and Methodology	3
Internal Controls	4
Prior Audits and Other Reviews	4
Other Matters of Interest	4
<b>Part II - Finding and Recommendations</b>	<b>7</b>
Oversight of the Defense Message System	8
<b>Part III - Additional Information</b>	<b>17</b>
Appendix A. DMS Writer-to-Reader Messaging Service	18
Appendix B. Life-Cycle Management of Automated Information Systems	20
Appendix C. Allegations and Audit Results	22
Appendix D. DMS Cost Documentation	27
Appendix E. Summary of Potential Benefits Resulting from Audit	28
Appendix F. Organizations Visited or Contacted	29
Appendix G. Report Distribution	30
<b>Part IV - Management Comments</b>	<b>33</b>
Under Secretary of Defense (Comptroller) Comments	34
Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) Comments	35

## **Part I - Introduction**

## Background

**DMS Purpose and Cost.** The Defense Message System (DMS) consists of hardware, software, procedures, standards, facilities, and support personnel to exchange messages electronically. The purpose of the DMS is to provide writer-to-reader organizational and individual message service to all DoD users, including deployed tactical users, and to connect to other Government, allied, and Defense contractor users as needed. When fully implemented, DMS will process messages at all security levels. The primary objective of DMS is to reduce cost and staffing. The secondary objective is to improve message security and service. DMS will cost about \* to acquire and will service about \* customers by the year 2000.

**Transition from Baseline System to Target Architecture.** The DMS will transition from the baseline system<sup>1</sup> to its target architecture in 2008. The DMS baseline system consists of the Automatic Digital Network (AUTODIN),<sup>2</sup> which processes organizational messages, and individual electronic mail processed via the DoD Internet. DMS will connect with the Defense Information Systems Network to provide worldwide message transfer capability. Detailed information on the DMS initiative and a diagram depicting the DMS writer-to-reader messaging service are in Appendix A.

**DMS Request for Proposal.** On March 16, 1994, the U.S. Air Force Standard System Center, in coordination with the Defense Information Systems Agency (who is responsible for managing DMS) released the DMS request for proposal (RFP). The RFP:

- o provides for hardware and software products, training, maintenance, integration, and implementation services to support DMS requirements;
- o states that to the maximum extent practical, DMS products should be commercial off-the-shelf; and
- o provides an initial contract period of 2 years, with six 1-year options.

The estimated date of contract award was December 17, 1994.<sup>3</sup> Cost for the first year of the contract was about \* .

\* Acquisition-Related data removed.

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<sup>1</sup>Baseline system configuration as of September 1989.

<sup>2</sup>A system established in the 1960s to provide secure, automated store-and-forward message service for the DoD.

<sup>3</sup>Contract award is now anticipated for February or March 1995.



**Designation of DMS as a Major Automated Information System.** In March 1994, the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) designated the DMS a major automated information system (AIS) subject to review by the Major Automated Information Review Council (MAISRC). Appendix B defines a major AIS and describes the major AIS life-cycle management review process.

**DoD Policy for Major Automated Information Systems.** Policy and procedures for the life-cycle management of major AISs are in DoD Directive 8120.1, "Life-Cycle Management of Automated Information Systems," January 14, 1993, and DoD Instruction 8120.2, "Automated Information Systems Life-Cycle Management Process, Review, and Milestone Approval Procedures," January 14, 1993.

DoD Directive 8120.1 states, in part, that it is DoD policy to:

- o Control expenditures on the AISs to ensure that derived benefits satisfy mission needs . . . in the most cost-effective manner . . . ,
- o Use life-cycle management review and milestone approval procedures to ensure that all AIS programmatic decisions are based on approved functional requirements and the total anticipated benefits that are expected to be derived over the life of the AIS.
- o Ensure that no funds are obligated for any AIS, in support of an area that has not successfully completed . . . management reviews . . . described in DoD Instruction 8120.2 . . . , and
- o Structure all program actions, especially solicitations and contract requirements, to allow adequate time for required reviews.

## Objective

The objective of this audit was to determine the validity of the Hotline allegations related to the RFP for the DMS. Specifically, we reviewed allegations that the RFP contained major flaws. The allegations related to three categories: the cost of DMS was understated, the required multilevel security environment was not defined, and future requirements were not stated in the RFP. The audit did not substantiate allegations concerning the multilevel security environment or future DMS requirements. Appendix C details the specific allegations and audit results pertaining to each allegation.

## Scope and Methodology

We reviewed the Defense Message System RFP dated March 16, 1994, including amendment 0001 issued May 6, 1994, and amendment 0002 issued

## **Introduction**

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May 16, 1994. We reviewed program management and cost documents dated from August 1988 to September 1994. We also reviewed cost data that will be used to prepare the cost documents listed in Appendix D. Additionally, we interviewed personnel from the office of the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) and the program manager's office. We also interviewed personnel from the National Security Agency because the agency is developing the DMS message security device.

This economy and efficiency audit was performed from July 1994 to October 1994 in accordance with auditing standards issued by the Comptroller General of the United States as implemented by the Inspector General, DoD. The audit did not include tests of internal controls because the audit was limited to the hotline allegations. We did not rely on computer-processed data or statistical sampling to achieve the audit objectives. Appendix F lists organizations visited or contacted during the audit.

## **Internal Controls**

We did not review the internal management control program for the DMS because we limited the scope of our audit to the specific allegations.

The audit identified a material noncompliance with DoD acquisition policy internal controls. Specifically, the MAISRC did not conduct a Milestone II review to authorize award of the DMS Phase 1 contract.

Recommendation 1.b. in this report, to which responsive action has already been taken, will assist in correcting the noncompliance. No monetary benefits will be realized by implementing the recommendation. Part II of the report discusses the material noncompliance in detail. A copy of the report will be provided to the senior official responsible for internal controls within the Department of Defense.

## **Prior Audits and Other Reviews**

There has been no prior audit coverage of the Defense Message System.

## **Other Matters of Interest**

The DMS Program Manager has employed an acquisition strategy of using international messaging standards and protocols (a set of rules or procedures commonly agreed upon by industry-wide committees on information

technology) and of encouraging industry development of commercial off-the-shelf products that use those standards and protocols to meet program requirements. DMS uses the international X.400 message handling system and X.500 directory service standards and protocols to meet mission requirements. DISA plans for the DMS to support individual and organizational messaging requirements by influencing commercial developers to integrate those standards and protocols into their electronic mail software.

DISA has established a process to certify commercial software applications for use on the DMS system. That certification encourages competition in the development of commercial off-the-shelf products. Any software developer, not just those under contract to develop the DMS, may submit software for DMS certification.

## **Part II - Finding and Recommendations**

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## Oversight of the Defense Message System

DoD acquisition policy was not followed for development of the Defense Message System, which has estimated total acquisition costs of \* and life-cycle costs of \* . Noncompliance with acquisition policy occurred because:

- o the Major Automated Information Systems Review Council did not plan to conduct a Milestone II review to authorize award of the DMS Phase 1 contract, and

- o the DMS Program Manager did not prepare and submit program cost documents to the Director, Program Analysis and Evaluation, for review and validation.

Without a MAISRC review to provide reasonable assurance that the Defense Message System will satisfy mission needs in the most cost-effective manner, award of the Defense Message System Phase 1 contract for \* will be premature.

## Background

**Purpose of the MAISRC.** The MAISRC reviews the life-cycle management for major automated information systems. The MAISRC is composed of the Chair, members, an Executive Secretary, and staff. The MAISRC, as the senior advisory body to the milestone decision authority, provides advice on program readiness to proceed into the subsequent life-cycle management phases. The Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) is the milestone decision authority.

**Life-Cycle Management Process.** The life-cycle management process provides for two types of reviews conducted by the MAISRC, a milestone review and an in-process review. The primary difference between the reviews is that DoD Instruction 8120.2 requires specific actions before, during, and after a milestone review, whereas an in-process review examines specific issues between milestones.

\* Acquisition-Related data removed.

**Milestone Reviews.** The purpose of the milestone review is to:

- o evaluate the completion of the minimum required life-cycle management accomplishments and exit<sup>4</sup> criteria,
- o recommend movement to the next phase, and
- o recommend exit criteria for the next milestone review.

**In-Process Reviews.** The MAISRC conducts in-process reviews between milestones to examine specific issues. The milestone decision authority may require an in-process review of a major AIS program at any time. The purpose of the in-process review is to determine:

- o current program status,
- o progress since the last review,
- o program risks, and
- o potential program problems.

## MAISRC Oversight of the Defense Message System

**DMS Life-Cycle Management Phase.** An Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) memorandum, dated March 2, 1994, states that the DMS met the thresholds of a major automated information system and was therefore subject to oversight by the MAISRC. The memorandum established the DMS program status as post-Milestone I and approved release of the DMS request for proposal. The memorandum directed DISA to present the DMS program to the MAISRC for a Milestone II review before award of the contract.

**Guidance for MAISRC Milestone Review.** Even though the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) directed that DMS undergo a MAISRC Milestone II review, which was scheduled for October 1994, the Milestone II was changed to an in-process review.<sup>5</sup> Milestone III, the first milestone review for the DMS program, is scheduled for third quarter, FY 1996, after contract award.

The objectives of the in-process review did not include the costs and benefits of DMS, which is contrary to policy in DoD Directive 8120.1. The objectives of the October 1994 in-process review were to:

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<sup>4</sup>Specific program criteria must be accomplished before proceeding to the next milestone review.

<sup>5</sup>The DMS in-process review was held on December 8, 1994

- o ensure the DMS program has an appropriate management structure and a technical and acquisition approach,
- o ensure the DMS is capable of satisfying validated requirements, and
- o approve award of the DMS contract.

DoD acquisition policy states that a MAISRC milestone review will be conducted to authorize expending resources for the development phase. Further, conducting a milestone review ensures that all MAISRC members attend the review. Because the scope of an in-process review may be limited to a specific issue, the MAISRC Chair may request that only selected MAISRC members attend an in-process review.

## DMS Cost Estimates for MAISRC Review

**DoD Requirements for Determining Cost-Effectiveness.** An independent review and validation of program cost estimates and cost-benefit analyses are essential for determining the cost-effectiveness of an AIS. Further, DoD Instruction 8120.2 states that, for all AISs designated for MAISRC oversight, the Assistant Secretary of Defense (Program Analysis and Evaluation) (now the Director, Program Analysis and Evaluation) shall

. . . review and validate, at appropriate life-cycle management reviews, the AIS program cost estimates, life-cycle cost estimates, independent cost estimates, benefit analyses, and functional economic analyses.

**Preparation and Validation of DMS Cost Estimates.** DoD policy is to structure contract solicitations to allow adequate time for required reviews. However, the DMS contract is planned to be awarded before the DMS costs and benefits are fully validated.

The Director, Program Analysis and Evaluation, has not reviewed and validated DMS cost estimates because the Program Office has not completed preparation of all cost documents. The cost analysis requirements description, life-cycle cost estimate, and independent cost estimate will be available only in draft form for the in-process review. The final cost analysis requirements description is not projected to be ready until the second quarter FY 1995. The life-cycle cost estimate and the independent cost estimate will not be in final form until the third quarter FY 1995. Appendix D shows the cost documentation the DMS Program Office plans to provide for the MAISRC in-process review and Milestone III review.

The DMS Quarterly Major Automated Information System Status Report, June 30, 1994, states that the Office of Program Analysis and Evaluation approved submission of the program cost documents in draft form for the in-process review and will validate the approach, methodology, and cost element structure for the draft estimates. Validation of only the approach,

methodology, and cost element structure is inconsistent with the requirements of DoD Instruction 8120.2. Further, as discussed below, the validation process should identify and correct any significant errors in the cost of the baseline system.

**Cost of the Baseline System.** In preparing the cost of the existing baseline system (AUTODIN) for the DMS Business Plan, September 1993, DISA incorrectly categorized about \* in DMS transition costs as baseline system costs. Those costs are actually costs to the Military Departments for upgrading the AUTODIN (see table below).

### Costs to Upgrade the AUTODIN

<u>Cost Element</u>	<u>Cost (millions) *</u>
Procurement	
Operations and Maintenance	
Staff Costs	
Total	

Costs for upgrading are more appropriately categorized as an alternative to AUTODIN rather than as baseline system costs. Accordingly, we concluded that the cost of the baseline system is overstated by about \* .

## Government-Furnished Equipment Costs Not Included in DMS Life-Cycle Costs

DoD Directive 8120.1 states that Government-furnished equipment and services obtained to implement the AIS shall be included in program and life-cycle costs. The DMS Program Office has not included the cost of Government-furnished microchips \* in DMS program costs.

The microchip is the major component in the Tessera Cryptographic Card, the DMS message security device developed and procured by the National Security Agency. The National Security Agency awarded a firm fixed-price, indefinite delivery/indefinite quantity contract on April 28, 1994, for production of the Tessera card. A maximum of \* cards can be procured from the contract.

\* Acquisition-Related data removed.



By excluding the cost of \* each for the Government-furnished microchip, DMS costs could be understated by as much as \* if all \* cards are ordered. More important, the costs will be understated by as much as \$190 million when the \* user population is attained.

Further, the RFP states that other Federal agencies can purchase equipment and services from the DMS contract. Purchases by non-DoD agencies are limited to 10 percent of the total estimated contract value over the life of the contract as determined at the time of contract award. DMS equipment requires the Tessera cryptographic card for each user. If 10 percent of the \* Tessera cards are ordered by non-DoD agencies, \$684,000 (see Appendix E) will be expended for non-DoD support. Unless controls are put in place to verify full recovery of the cost of the Government-furnished microchip in the Tessera card, the DoD will be subsidizing \* for each card sold to a non-DoD agency.

## Summary

The March 1994 Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) memorandum designated the DMS a major AIS subject to MAISRC review and directed a Milestone II review before award of the DMS contract. Instead, the MAISRC planned an in-process review to approve the contract award, and a DMS milestone review will not occur until September 1995 when a Milestone III review is scheduled.

An in-process review that does not outline specific requirements before a Milestone III review is inappropriate for approval of the award of the DMS contract. Additionally, DMS program cost-benefit analyses have not been validated as required by DoD policy. Further, the cost of the baseline system is overstated, and DMS program costs do not contain the cost of Government-furnished microchips used in the Tessera cryptographic card.

## Recommendations, Management Comments, and Audit Responses

1. We recommend that the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence):

\* Acquisition-Related data removed.

a. Delay approval to award the Defense Message System development contract until program cost data are reviewed and validated for completeness and accuracy.

b. Require a Major Automated Information Systems Review Council Milestone II review of the Defense Message System program. The review should include establishment of a program baseline, validation of program costs and cost-benefit analyses, documentation requirements, and exit criteria that must be met before the Milestone III review.

**Management Comments.** The Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) (the Chair of the MAISRC) stated that the contract for the DMS should be awarded, \* . Additionally, the Assistant Secretary stated that on December 8, 1994, the MAISRC conducted an in-process review of the DMS rather than a Milestone II review and that the resultant System Decision Memorandum established the requirements before the Milestone III review. \* and provide subsequent direction regarding DMS implementation. The comments also pointed out that the distinction between a milestone and an in-process review is increasingly difficult to make, particularly for information systems that are composed of nondevelopmental items and are incremental or evolutionary in nature. Because automated information systems do not readily fit into traditional life-cycle phases and milestones, the thoroughness of MAISRC reviews will be dictated by the program decision under consideration rather than by milestone designation. The complete text of management comments is in Part IV of the report.

**Audit Response.** After the draft report was issued on November 10, 1994, we met with representatives of the Under Secretary of Defense (Comptroller), the Director, Program Analysis and Evaluation, the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence), and the Defense Information Systems Agency. As a result of several meetings, we no longer objected to award of the contract \* and cost risk to the Government was minimized during the period that cost estimates are completed and validated and that the DMS program is reviewed by the MAISRC. Therefore, we consider management comments responsive to the recommendation. Further, we recognize that the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) is revising the major automated information system review process. Our comments on the review process will be presented in an audit report to be issued under Project No. 4RE-5025.01, "Oversight Process of the Major Automated Information System Review Council."

\* Acquisition-Related data removed.

**2. We recommend that the Under Secretary of Defense (Comptroller) \* for the Defense Message System until the Director, Program Analysis and Evaluation, reviews and validates program costs and cost-benefit analyses and a Milestone II review is held.**

**Management Comments.** The Under Secretary of Defense (Comptroller) planned to release funds for contract award subject to the provisions of the System Decision Memorandum, which the MAISRC issued after the December 8, 1994, in-process review. The Under Secretary's comments are in Part IV of the report. The Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) commented that \* .

**Audit Response.** The Under Secretary's comments meet the intent of the recommendation.

**3. We recommend that the Director, Defense Information Systems Agency, correct Defense Message System cost data to include the cost of Government-furnished equipment and to show the costs to upgrade the baseline system as an alternative to the baseline system.**

**Management Comments.** The Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) provided a consolidated response for the Directors, Defense Information Systems Agency and National Security Agency. The Assistant Secretary concurred with including the cost of Government-furnished equipment as part of the DMS cost data, but nonconcurred with showing costs to upgrade the baseline system as an alternative to the baseline system. While recognizing that labeling the upgrade costs as transition costs instead of baseline costs may have been misleading, the Assistant Secretary stated that treating the transition costs as an alternative to the baseline system was inappropriate because the costs do not satisfy the validated requirements of the DMS.

**Audit Response.** Management comments on the costs of Government-furnished equipment are responsive. However, we defer to the Office of the Director, Program Analysis and Evaluation in determining the appropriate treatment of the \* in costs. Whether costs to upgrade the baseline system should be shown as costs of an alternative to the baseline system should be decided as part of the Office of the Director of Program Analysis and Evaluation review and validation of DMS program costs.

**4. We recommend that the Director, National Security Agency, in conjunction with the Director, Defense Information Systems Agency, establish controls to recover the cost of the microchip in the Tessera card when Defense Message System equipment is sold to non-DoD organizations.**

\* Acquisition-Related data removed.

**Management Comments.** In the consolidated response, the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) concurred, stating that the National Security Agency is partially subsidizing the current cost of the microchip to cover nonrecurring development and manufacturing startup costs and that the partial subsidy is being phased out as microchip development is completed and per microchip cost is reduced. Additionally, when the microchip development is complete, Tessera (now Fortezza) card vendors will purchase the microchip directly from multiple sources and end the need to impose controls to ensure cost recovery because all card and chip costs will be borne by the purchasers.

## **Part III - Additional Information**

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## Appendix A. DMS Writer-to-Reader Messaging Service

**Origin of DMS.** In 1988, the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) initiated the DMS program to establish the future of DoD electronic messaging. On February 6, 1989, the Joint Chiefs of Staff validated the DMS Multicommand Required Operational Capability. The DMS Panel, chaired by the Assistant Secretary with representatives from the Military Departments and Defense agencies, provides overall direction on the program. The Assistant Secretary established the Program Management Office within the Defense Information Systems Agency (DISA). In March 1994, the Assistant Secretary designated the DMS a major automated information system subject to review by the Major Automated Information Systems Review Council.

**DMS Uses Common Protocol Standards.** Federal Information Processing Standards Publication 146, "Government Open Systems Interconnection Profile," states that Federal Agencies acquiring computer network products and services are required to use a common set of data communication protocols. The protocols must allow systems developed by different vendors to interoperate and enable the users of different applications on the systems to exchange information. DMS complies with the Government Open Systems Interconnection Profile requirement by using the international standards and protocols of the X.400 message handling system and X.500 directory service.

**Transition to a Mature System.** The transition to DMS will occur in three phases.

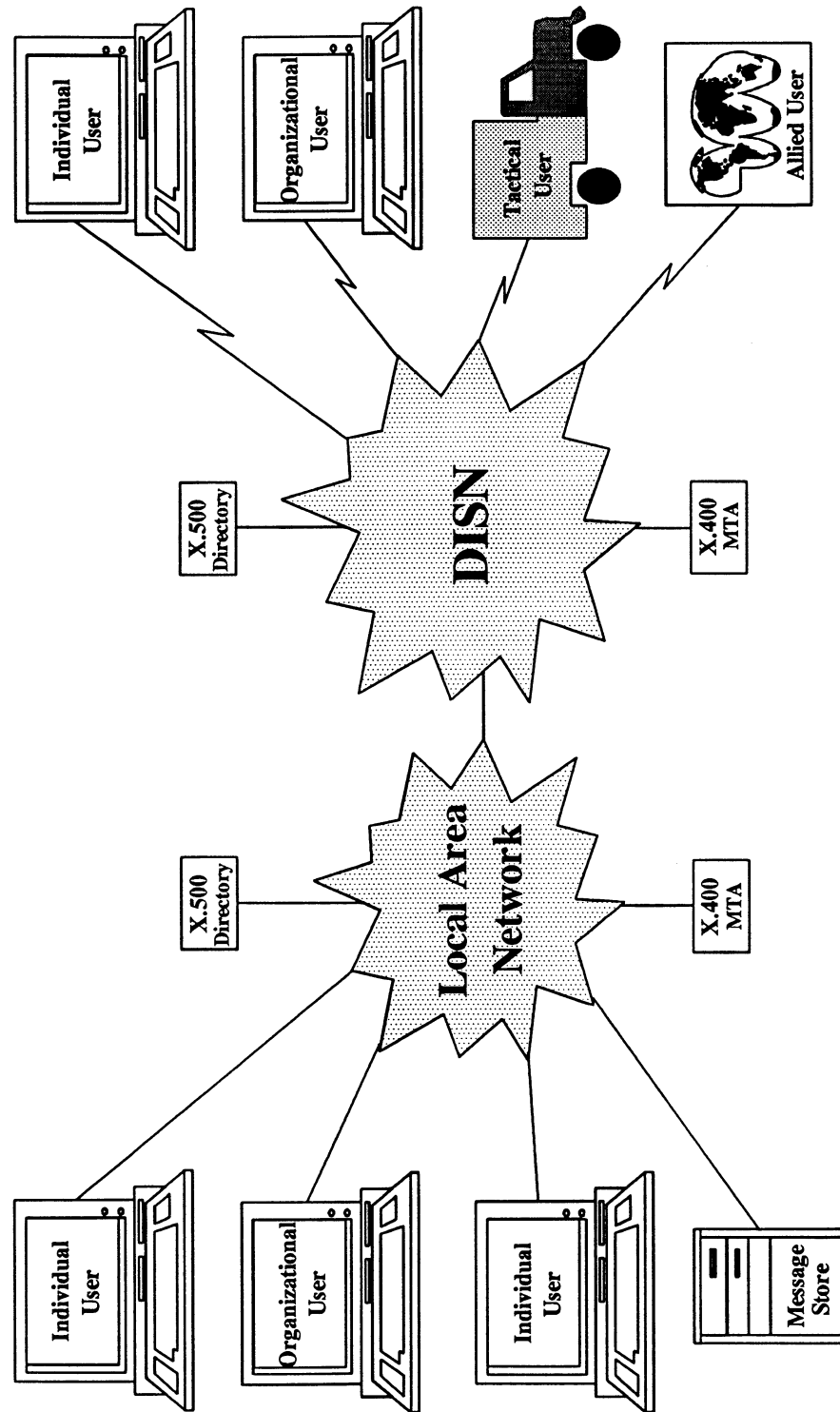
- o Phase 1 - Begins organizational messaging transition with a phaseout of base-level telecommunications centers and the migration of electronic mail to X.400 standard and protocol.

- o Phase 2 - Initial operational capability for X.400 and X.500 individual and organizational messaging with Secure Data Network System Message Security protocol protection.

- o Phase 3 - Begins when the last AUTODIN Switching Centers are closed out. DMS will be fully developed as an integrated individual and organizational messaging service.

A depiction of the DMS Writer-to-Reader Messaging Service follows.

DMS Writer-to-Reader Messaging Service



DISN - Defense Information Systems Network  
MTA - Message Transfer Agent

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## Appendix B. Life-Cycle Management of Automated Information Systems

### Automated Information Systems

**What is an Automated Information System?** An automated information system (AIS) is composed of computer hardware and software, data, and telecommunications that perform functions such as collecting, processing, transmitting, and displaying information. Mission-critical computer resources, including both hardware and software, that are physically part of, dedicated to, or essential to a weapon system's mission performance are excluded from this definition.

**Major Automated Information Systems.** Computed in FY 1990 dollars, a major AIS is a program that has:

- o anticipated total program costs of more than \$100 million,
  - o estimated program costs of more than \$25 million in any single year, or
  - o estimated life-cycle costs of more than \$300 million, or
- has been designated a major AIS by the milestone decision authority.

### Life-Cycle Management Review of Major AISs

**Responsibility for Reviewing Major AISs.** The Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) is responsible for reviewing each major AIS program designated for Major Automated Information System Review Council (MAISRC) oversight. Responsibilities of the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) include:

- o serving as the milestone decision authority;
- o serving as or designating the MAISRC Chair, who ensures that the MAISRC members review each major AIS and provide recommendations to the milestone decision authority; and
- o signing the System Decision Memorandum, which documents MAISRC decisions and is distributed to the DoD Components.



**MAISRC Milestone Reviews.** During its life cycle, a program may go through five milestones and their associated phases. A milestone is a decision point, separating the phases of the AIS life cycle, at which the AIS status is assessed to determine progression to the next phase. The five milestones follow.

- o Milestone 0 - determines validity of the mission need and authorizes the concept exploration and definition phase.

- o Milestone I - selects the best program concept and authorizes the demonstration and validation phase.

- o Milestone II - authorizes program management to initiate and expend resources for the activities of the development phase.

- o Milestone III - determines system production and the deployment decision.

- o Milestone IV - assesses system effectiveness during the operations and support phase. A decision may be made to continue, modernize, or terminate the AIS.

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## Appendix C. Allegations and Audit Results

The complaint to the Defense Hotline consisted of 3 major allegations and 17 suballegations, which are discussed with the audit results below.

### **1. Allegation. The cost of DMS has been understated.**

**Audit Result.** The allegation had merit in that life-cycle cost estimates did not include \$190 million for Government-furnished microchips. The inclusion of the cost of Government-furnished equipment in program costs is discussed in Part II.

#### **a. The estimated cost of the DMS infrastructure does not include hardware, software, or transport elements on end-user devices.**

**Audit Result.** The suballegation had merit in that cost estimates did not include \$190 million for Government-furnished microchips. However, the life-cycle cost estimate in the DMS Business Plan contains estimated costs for end-user hardware and software. The cost of Government-furnished microchips is discussed in Part II.

#### **b. The estimated cost of the DMS infrastructure does not include costs associated with migration phases such as the cost to upgrade the Phase I infrastructure elements to migrate from unclassified but sensitive messages to messages classified secret and above.**

**Audit Result.** The suballegation had no merit. The DMS program manager stated that computer terminals to support messages classified secret and above will have to contain a high-end 486 microprocessor (16 megabyte random access memory, 300 megabyte hard drive). However, the program manager also stated that user terminals should not have to be upgraded solely to support DMS classified messaging requirements because, by FY 1997, he believed that the common computer will be as powerful as the 486 microprocessor.

#### **c. The estimated cost of the DMS infrastructure does not include the cost to make commercial off-the-shelf software compliant with the requirements of a multilevel secure environment.**

**Audit Result.** The suballegation had no merit because commercial off-the-shelf software will not have to be made compliant with a multilevel secure environment. Multilevel security for the DMS will be provided by adding hardware, developed by the National Security Agency, that allows for commercial off-the-shelf software to reside in a multilevel secure environment for the DMS end-user's computer system.

#### **d. The estimated cost of the DMS infrastructure does not include the cost of the contractor guarantee to provide lifetime upgrades to DMS software.**

**Audit Result.** The suballegation had no merit. The RFP does not require a lifetime guarantee to upgrade DMS software.

**e. The primary objectives of saving money and staffing will not be realized because replacement of the Automatic Digital Network (AUTODIN) is the only quantifiable savings possible.**

**Audit Result.** The suballegation had no merit. The DMS Program Office has identified significant potential monetary benefits from terminating the AUTODIN system and implementing DMS.

**f. The primary objectives of saving money and staffing will not be realized because the Defense Information Systems Agency has no schedule to replace AUTODIN Switching Centers and to eliminate Telecommunication Centers.**

**Audit Result.** The suballegation had no merit. DISA has announced a schedule to phase out AUTODIN Switching Centers and Telecommunications Centers by the end of FY 2000.

**g. The cost difference between AUTODIN services, commercial off-the-shelf electronic mail, and nonstandard, secure electronic mail operated in accordance with Allied Communications Pamphlet 123 has not been taken into account in cost considerations.**

**Audit Result.** The suballegation had merit. The DMS program manager had not developed accurate estimates for the cost of the status quo system--the AUTODIN and standard electronic mail. The DMS Program Office is developing a cost analysis to include more accurate data on the AUTODIN and standard electronic mail.

**2. Allegation. The required multilevel security environment is not defined.**

**Audit Result.** The allegation had no merit. The National Security Agency is developing the multilevel security devices required to support the DMS.

**a. The cards to process unclassified communications are prototype.**

**Audit Result.** The suballegation had no merit. The National Security Agency has awarded a production contract for the Tessera cryptographic cards. The first delivery was in December 1994.

**b. The cards and system methodology required to process secure communications are still in development, and the method that will be used to match user identification on each Tessera card to the X.500 directory has not been fully developed. Directories and Tessera cards must be synchronized.**

**Audit Result.** The suballegation had no merit. DMS uses standard X.500 directory protocols. No modifications are necessary for Tessera cards to use those protocols.

## Appendix C. Allegations and Audit Results

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**c. The cost to develop, maintain, and audit the X.500 directory has not been considered. The Tessera card will require approximately 2,000 bits per user or 500 megabytes for a projected population of 2 million users.**

**Audit Result.** The suballegation had no merit. The X.500 protocol standard is designed to support public key encryption schemes.\* No special development will be required to support the Tessera cards. The cost of commercial off-the-shelf directory maintenance is included in the DMS Program plan. Security audits of commercial off-the-shelf products, such as the X.500 directory, will not be necessary because the devices developed by the National Security Agency will allow commercial off-the-shelf products to reside in a multilevel secure environment.

Also, the allegation that a directory (an index of users and user information) must be sized to handle 500 megabytes of Tessera data to support 2 million users had no merit. When the DMS is a mature system in the year 2000, directory service will be provided by 640 directories.

**d. There will be significant costs to process message preparation and processing inquiries into a 500 megabyte directory.**

**Audit Result.** The suballegation had no merit. DMS users will pay a service charge for DMS infrastructure services that will include directory service costs.

**3. Allegation. The DMS RFP does not refer to future requirements.**

**Audit Result.** The allegation had no merit. The RFP refers to both current and future requirements.

**a. DMS does not incorporate known programs such as Soldier of the 21st Century.**

**Audit Result.** The suballegation had no merit. Users are responsible for ensuring that unique architectural plans are considered in DMS planning. The DMS Implementation Group has established a Joint Projects Working Group to coordinate user requirements.

**b. DMS ignores the Government-wide electronic mail initiative at the Department of Health and Human Services.**

**Audit Result.** The suballegation had no merit. The final report of the Government-wide electronic mail task force, states that Federal business grade messaging should be built in accordance with DMS requirements. Additionally, the Government-wide electronic mail task force used the DMS operational messaging characteristics for the business grade messaging requirement.

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\*Method to prevent unauthorized access on a system that is accessible to many users.

**c. The RFP states that 2 million people will use the DMS, but no users list has been developed.**

**Audit Result.** The suballegation had no merit. The Defense Information Systems Agency conducted surveys as a basis for its estimate of 2 million users.

**d. Mobilization and wartime requirements are not addressed.**

**Audit Result.** The suballegation had no merit. The DMS Multicommand Required Operational Capability specifies requirements for both wartime and peacetime environments.

**e. DMS does not account for theater system override needs expressed in global command and control system requirements.**

**Audit Result.** The suballegation had no merit. The global command and control system program manager and the DMS program manager report to the DISA Deputy Director for Command, Control, Communications, Computers, and Intelligence Programs. DISA has established a joint project with the Military Departments to ensure that the global command and control system implements DMS-compatible automated message handling capabilities.

**f. DMS control functions are not required to work in conjunction with the control functions of the Defense Information System, Defense Information Systems Network, and National Information Infrastructure.**

**Audit Result.** The suballegation had no merit. DMS system control will be fully integrated with the DISA Integrated Control Center and the Post-Federal Telecommunications Service 2000 system control functions. DISA tasked a joint Army, Air Force, and Navy DMS Service Management Action Team to ensure that DMS control is collocated and fully integrated with global and regional integrated control center activities.

**g. Secure system audit capabilities to account for the integration of DMS and commercial off-the-shelf applications on the same user platform are not included in the RFP.**

**Audit Result.** The suballegation had no merit. The DMS security system developed by the National Security Agency does not require an audit capability for integration of commercial off-the-shelf applications on user platforms.

**h. DMS end-user workstation configurations are not articulated in sufficient detail to permit accurate budget decisions at any given point in the program development.**

**Audit Result.** The suballegation had no merit. The DMS Program Office has provided all unique system requirements to the DMS users. In addition, the Program Office does not anticipate upgrades of workstations solely for DMS implementation.

## Appendix C. Allegations and Audit Results

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**i. The contractor can deliver DMS products under Phase I of the contract which, for reasons of security, will not be compatible with DMS standards and protocols under Phase II of DMS. Delivery of DMS Phase II and beyond is at risk for the Government.**

**Audit Result.** The suballegation had no merit. The ability of the DMS Program to move from Phase I to Phase II, unclassified to classified, hinges primarily on the ability of the National Security Agency to deliver security protection products being developed under the Multilevel Information Systems Security Initiative Program. When available, the DMS-Government Open Systems Interconnection Profile contractor will be tasked to integrate products for the Multilevel Information Systems Security Initiative Program into the commercial off-the-shelf products.

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## Appendix D. DMS Cost Documentation

<u>DMS Cost Document</u>	<u>Available at In-Process Review<sup>1</sup></u>	<u>Available at Milestone III<sup>2</sup></u>
Cost Analysis Requirements Document	Draft Version	Final Version
Life-Cycle Cost Estimate	Draft Version	Final Version
Independent Cost Estimate	Interim Version	Draft/Final Version
Functional Economic Analysis	Final Version	Final Version

<sup>1</sup>In-process review was initially scheduled for October 1994. Review was held on December 8, 1994.

<sup>2</sup>Milestone III scheduled for September 1995.

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## Appendix E. Summary of Potential Benefits Resulting from Audit

Recommendation Reference	Description of Benefit	Amount and/or Type of Benefit
1.a.	Economy and Efficiency. Program funds will be spent in a cost-effective manner.	Nonmonetary.
1.b.	Internal Controls and Program Results. Program documentation will be adequate, program costs will be complete and accurate, and exit criteria will be established.	Nonmonetary.
2.	Economy and Efficiency. Funds will be spent effectively through review and approval of all key DMS program issues.	Undeterminable. Amount of funds put to better use will depend on outcome of Recommendation 1.b.
3.	Economy and Efficiency. Funds will be spent effectively through valid cost and cost-benefit analyses.	Nonmonetary.
4.	Economy and Efficiency. DoD will recover full cost of DMS equipment purchased by non-DoD agencies.	Funds of \$684,000 put to better use. Appropriation: 97X/X0400.4500 Program Elements: 0303140G and 0301011G, National Security Agency.



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## **Appendix F. Organizations Visited or Contacted**

### **Office of the Secretary of Defense**

Under Secretary of Defense for Acquisition and Technology, Washington, DC

Under Secretary of Defense (Comptroller)

Director, Program Analysis and Evaluation, Washington, DC

Assistant Secretary of Defense (Command, Control, Communications, and  
Intelligence), Washington, DC

### **Other Defense Organizations**

Defense Information Systems Agency, Arlington, VA

National Security Agency, Fort Meade, MD

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## **Appendix G. Report Distribution**

### **Office of the Secretary of Defense**

Under Secretary of Defense for Acquisition and Technology  
Director for Test, Systems Engineering and Evaluation  
Under Secretary of Defense (Comptroller)  
Director, Program Analysis and Evaluation  
Assistant Secretary of Defense (Command, Control, Communications, and Intelligence)  
Director, Operational Test and Evaluation  
Deputy Under Secretary of Defense (Acquisition Reform)  
Assistant to the Secretary of Defense (Public Affairs)  
Director, Joint Staff

### **Department of the Army**

Secretary of the Army  
Auditor General, Department of the Army

### **Department of the Navy**

Secretary of the Navy  
Assistant Secretary of the Navy (Financial Management)  
Auditor General, Department of the Navy

### **Department of the Air Force**

Secretary of the Air Force  
Assistant Secretary of the Air Force (Financial Management and Comptroller)  
Auditor General, Department of the Air Force

### **Defense Organizations**

Director, Defense Contract Audit Agency  
Director, Defense Information Systems Agency  
Director, Defense Logistics Agency  
Director, National Security Agency  
Inspector General, Central Imagery Office  
Inspector General, Defense Intelligence Agency  
Inspector General, National Security Agency  
Director, Defense Logistics Studies Information Exchange

## **Non-Defense Federal Organizations**

Office of Management and Budget  
Technical Information Center, National Security and International Affairs Division,  
General Accounting Office

Chairman and Ranking Minority Member of Each of the Following Congressional  
Committees and Subcommittees:

Senate Committee on Appropriations  
Senate Subcommittee on Defense, Committee on Appropriations  
Senate Committee on Armed Services  
Senate Committee on Governmental Affairs  
House Committee on Appropriations  
House Subcommittee on National Security, Committee on Appropriations  
House Committee on Government Reform and Oversight  
House Subcommittee on National Security, International Affairs, and Criminal  
Justice, Committee on Government Reform and Oversight  
House Committee on National Security

## **Part IV - Management Comments**

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## Under Secretary of Defense (Comptroller) Comments

Final Report  
Reference

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\* Acquisition-Related data removed.

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## **Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) Comments**

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\* Acquisition-Related data removed.

## **Audit Team Members**

This report was prepared by the Readiness and Operational Support Directorate, Office of the Assistant Inspector General for Auditing, Department of Defense.

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